

<u>Science</u>	
Properties and Principles of Matter and Energy	
	<p>Mixtures and Solutions</p> <p>The students will be able to :</p> <ul style="list-style-type: none"> ▪ Describe and compare the masses of objects to the nearest gram, using balances ▪ Describe and compare the volumes (the amount of space an object occupies) of objects, using a graduated cylinder ▪ Recognize no two objects can occupy the same space at the same time (e.g., water level rises when an object or substance, such as a rock, is placed in a quantity of water). ▪ Classify types of materials (e.g., water, salt, sugar, iron filings, salt water) into substances (materials that have specific physical properties) or mixtures of substances by using their characteristic properties ▪ Identify water as a solvent that dissolves materials (Do not assess the term solvent) ▪ Observe and describe how mixtures are made by combining solids or liquids, or a combination of these. ▪ Distinguish between the components in a mixture (e.g., trail mix, conglomerate rock, salad). ▪ Describe ways to separate the components of a mixture by their properties (i.e., sorting, filtration, magnets, screening). ▪ Recognize that the total mass of a material remains constant whether it is together, in parts, or in a different state. <p>Forms of Energy: Electrical Circuits</p> <p>The students will be able to:</p> <ul style="list-style-type: none"> ▪ Construct and diagram a complete electric circuit by using source (e.g., battery), means of transfer (e.g., wires), and receiver (e.g., resistance bulbs, motors, fans) ▪ Observe and describe the evidence of energy transfer in a closed series circuit (e.g., lit bulb,

	<p>moving motor, fan)</p> <ul style="list-style-type: none"> ▪ Classify materials as conductors or insulators of electricity when placed within a circuit (e.g., wood, pencil lead, plastic, glass, aluminum foil, lemon juice, air, water) ▪ Identify the evidence of energy transformations (temperature change, light, sound, motion, and magnetic effects) that occur in electrical circuits ▪ Design and construct an electrical device using materials and/or existing objects, that can be used to perform a task (assess locally)
<p>Properties and Principles of Force and Motion</p>	
	<p>Laws of Motion The students will be able to:</p> <ul style="list-style-type: none"> ▪ Identify the forces acting on the motion of objects traveling in a straight line. ▪ Recognize friction as a force that slows down or stops a moving object that is touching another object or surface. ▪ Compare the forces (measured by a spring scale in Newton's) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth) ▪ Determine the gravitational pull of the Earth on an object (weight) using a spring scale. ▪ Recognize that balanced forces do not affect an object's motion. ▪ Describe how unbalanced forces acting on an object changes its speed (faster/slower), direction of motion, or both. ▪ Explain how increasing or decreasing the amount of force on an object affects the motion of that object. ▪ Explain how the mass of an object (e.g., cars, marbles, rocks, boulders) affects the force required to move it. ▪ Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object. ▪ Predict the effects of an electrostatic force

	(static electricity) on the motion of objects (attract or repel).
<p>Changes in Ecosystems and Interactions of Organisms with Their Environments</p>	
	<p>The students will be able to:</p> <ul style="list-style-type: none"> ▪ Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism) ▪ Recognize different environments (i.e., pond, forest, prairie) support the life of different types of plants and animals ▪ Identify examples in Missouri where human activity has had a beneficial or harmful effect on other organisms (e.g., feeding birds, littering vs. picking up trash, hunting/conservation of species, paving/restoring green space) ▪ Classify populations of organisms as producers, consumers, or decomposers by the role they serve in the ecosystem. ▪ Differentiate between the three types of consumers (herbivore, carnivore, omnivore) ▪ Categorize organisms as predator or prey in a given ecosystem ▪ Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves). ▪ Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages). ▪ Recognize internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation). ▪ Predict which plant or animal will be able to

	<p>survive in a specific environment based on its special structures or behaviors.</p>
<p>Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)</p>	
	<p>Changes in the Earth's Surface The students will be able to:</p> <ul style="list-style-type: none"> ▪ Identify and describe the components of soil (e.g., plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g., odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate). ▪ Compare the physical properties (i.e., size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties). ▪ Observe and describe the breakdown of plant and animal material into soil through decomposition processes (i.e., decay, rotting, composting, digestion). ▪ Identify the major landforms on Earth (i.e., mountains, plains, oceans, river valleys, coastlines, canyons). ▪ Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth's surface materials and/or landforms. ▪ Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth's surface materials and/or landforms. ▪ Identify the ways humans affect the erosion and deposition of Earth's materials (e.g., clearing of land, planting vegetation, paving land, construction of new buildings). ▪ Propose ways to solve simple environmental problems (e.g., recycling, composting, ways to decrease soil erosion) that result from human

	activity.
General Science Principles	
	<p>The students will be able to:</p> <ul style="list-style-type: none">▪ Formulate testable questions and explanations (hypothesis)▪ Recognize the characteristics of a fair and unbiased test▪ Conduct a fair test to answer a question▪ Make qualitative observations using the five senses▪ Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)▪ Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume to the nearest milliliter, weight to the nearest Newton▪ Compare amounts/measurements▪ Judge whether measurements and computation of quantities are reasonable.▪ Use quantitative and qualitative data as support for reasonable explanations▪ Use data as support for observed patterns and relationships, and to make predictions to be tested▪ Evaluate the reasonableness of an explanation▪ Analyze whether evidence supports proposed explanations▪ Communicate the procedures and results of investigations and explanations through oral presentations, drawings and maps, data tables, graphs (bar, single line, pictograph) and writings▪ Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology (assess locally).▪ Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or

Fourth Grade

	<p>nonfiction of people working alone or in groups solving everyday problems or learning through discovery).</p> <ul style="list-style-type: none">▪ Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (assess locally).
Impact of Science, Technology and Human Activity	
	<p>The students will be able to:</p> <ul style="list-style-type: none">▪ Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers).▪ Identify how the effects of inventions or technological advances (e.g., different types of light bulbs, semiconductors/integrated circuits and electronics, satellite imagery, robotics, communication, transportation, generation of energy, renewable materials) may be helpful, harmful, or both (assess locally).